USSR

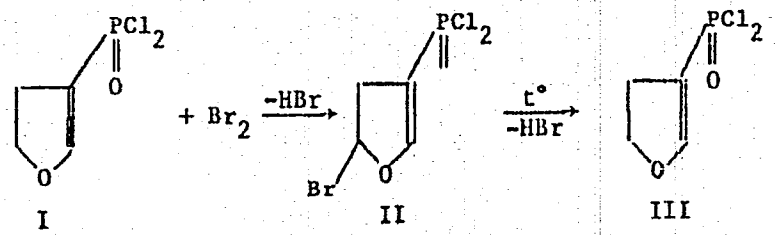
UDC 547.341

FRIDLAND, S. V., SHOSTAK, V. P., KAMAY, G. Kh.

"Interaction of Vinylphosphonates with Bromine"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 121-123

Abstract: A study was made of the bromination of the acid dichloride of dihydrofuranephosphonic acid as a substitution reaction with respect to the most mobile atom of hydrogen of the ring. The process is described as follows:



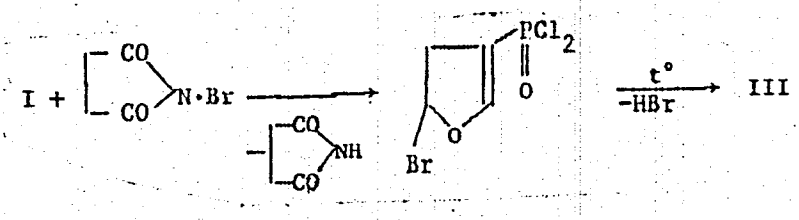
I II III

The intermediate product was isolated as follows:

1/2

USSR

FRIDLAND, S. V., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 121-123



This process is an indirect confirmation of occurrence of the interaction of the acid dichloride (I) with bromine by the scheme with substitution of the most mobile hydrogen atom. Experimental procedures, yields and physical characteristics are presented for obtaining the acid dichloride of furan-3-phosphonic acid and a number of its esters.

2/2

USSR

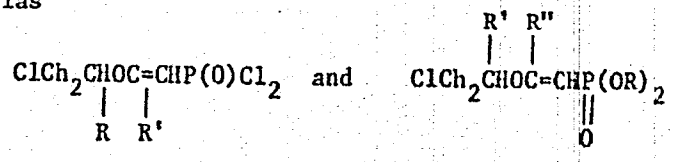
UDC 547.341

FRIDLAND, S. V., CHIRKUNOVA, S. K., ZYKOVA, T. V.

"Interaction of Phosphorus Pentachloride with 1,3-dioxocyclopentanes. III"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 117-120

Abstract: The interaction of phosphorus pentachloride with 2-methyl-1,3-dioxolanes leads to the synthesis of acid dichlorides of β-(β-chloraloxy)vinylphosphonic acids [S. V. Fridland, et al., ZhOKh, No 41, 554, 1971]. This reaction was studied further to discover the laws of its occurrence. It was demonstrated that 1,3-dioxolanes substituted in position 2 enter into an interaction with phosphorus pentachloride with the formation of the acid dichlorides of the corresponding phosphonic acids. The properties of the compounds with the general formulas



and

are tabulated.

1/1

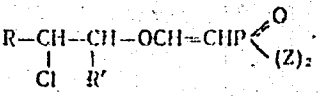
USSR UDC: 547.341.26'118.07

FRIDLAND, S. V., CHIRKUNOVA, S. K., KAMAY, G. Kh., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"A Method of Synthesizing β-(β-Chloralkoxy)vinylphosphonic Acid Derivatives"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 15, May 71, Author's Certificate No 302344, Division C, filed 6 Jan 70, published 28 Apr 71, p 80

Translation: This Author's Certificate introduces: 1. A method of synthesizing β-(β-chloralkoxy)vinylphosphonic acid derivatives of the general formula



where Z is chlorine, OR"; R and R' are hydrogen, alkyl. As a distinguishing feature of the patent, substituted 2-methyl-1,3-dihydroxycyclopentane reacts with phosphorus pentachloride in an organic solvent such as benzene, followed by sulfur dioxide treatment of the resultant product and isolation of the final product or conversion to the corresponding ester by conventional methods. 2. A modification of this method distinguished by the fact that the phosphorus

1/2

USSR

FRIDLAND, S. V., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 15, May 71,

pentachloride and substituted 2-methyl-1,3-dihydroxycyclopentane are taken in a ratio of 3:1, respectively. 3. A modification of this method distinguished by the fact that the process is carried out at 5-10°C with subsequent temperature increase to 30°C.

2/2

USSR

UDC: 547.341

FRIDLAND, S. V., ZYKOVA, T. V., CHIRKUNOVA, S. K., KATAYEVA, V. A. and KAMAY, G. Kh. (deceased), Kazan Chemical-Technological Institute imeni S. M. Kirov

"Reaction of Phosphorus Pentachloride with 2-Methyl-1,3-dioxycyclopentanes. II"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 1041-1044

Abstract: On the basis of NMR spectra, it was established that the reactions of phosphorus pentachloride with 2-methyldioxolan, 2,4-dimethyl-dioxolan and β-chloroethylvinyl ether are stereospecific. The acid dichloride of β-(β-chloroalkoxy)vinylphosphonic acid is formed only as the trans-isomer. This acid dichloride was further treated with alcohols to form a series of esters, the physical constants of which are presented in the article.

1/1

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820011-5"

USSR

UDC 547.341

FRIDLAND, S. V., TSIVUNIN, V. S., FRIDLAND, D. V., KAMAY, G. KH. (DECEASED), Kazan' Chemical-Technological Institute imeni S. M. Kirov, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR

"Reactions of α-Haloesters With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1993-1995

Abstract: Reaction of α-chloroethylbutyl ether with PCl_5 is exothermic, leading to a white complex which upon treatment with SO_2 gives butoxyvinylphosphonic acid dichloride. When PCl_5 reacts with α-chloromethylalkylethers, no phosphorylated products are obtained: only chlorinated ethers. Reaction of α-chloroethylvinyl ether with PCl_5 yields 2-chloro-2-(1-chloroethoxy)-ethylphosphonic acid dichloride (I), which can be obtained, however, only when distillation of the product is carried out at 6 mm pressure or below; at higher temperatures hydrogen chloride is split off. One molecule of HCl is also split off upon treatment with one mole of

1/2

USSR

FRIDLAND, S. V., et al, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1993-1995

triethylamine. Chlorine atoms in (I) are quite labile and can easily be replaced by ethoxy groups when reacted with sodium ethoxide. V. KATAYEVA also participated in the experiments.

2/2

USSR

UDC 547.341

FRIDLAND, S. V., CHIRKUNOVA, S. K., KATAYEVA, V. A., and KAMAY, G. Kh., (Deceased), Kazan' Chemical-Technological Institute imeni S. M. Kirov

"Reaction of Phosphorus Pentachloride With 2-Methyl-1,3-dioxocyclopentanes-1"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 3, Mar 71, pp 554-556

Abstract: Reaction of phosphorus pentachloride with 2-methyl-1,3-dioxocyclopentanes takes place with a break in the cyclopentyl ring to give dichloroanhydrides of β-(β-chloroalkoxo)vinylphosphonic acids. 200 g of phosphorus pentachloride was added in portions to 28 g ethyleneacetal in 150 ml absolute benzene with vigorous stirring, keeping the reaction temperature at 5°. Then the mixture was heated for one hour at 30°. The complex formed was decomposed after 12 hours with sulfur dioxide to give 40% of the dichloroanhydride of β-(β-chloroethoxy)vinylphosphonic acid, b.p. 141-142°/5 mm, d_4^{20} 1.4868, n_D^{20} 1.522. The dichlorides obtained react with secondary amines, alkaline alcohols, and alkoxides to yield corresponding amides and esters.

1/1

USSR

UDC 547.26.118

FRIDLAND, S. V., YAKIMOVA, T. YA., and KAMAY, G. Kh. (deceased), Department of Technology of Basic Organic and Petrochemical Synthesis, Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Study of the Reaction between Phosphorus Tricholorde and o-Allyl-p-Cresol"

Ivanovo, Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, vol. 13, no. 12, 70, pp 1760-1761

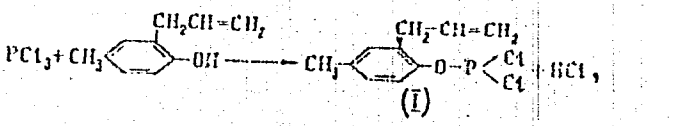
Abstract: The reaction of o-allyl-p-cresol with phosphorus trichloride has been studied. Fractionation of the reaction mass yielded,in analytically pure form, two fractions -- diacid chloride of o-allyl-p-crysylphosphorous acid (I) and the acid chloride of di(o-allyl-p-cresyl) phosphorous acid (II). The reaction was conducted in equimolar ratios and the formation of product II may be explained as the reaction of nucleophilic substitution of the second chlorine atom as well as by concurrent disproportionation. The obtained acid chlorides are colorless transparent slightly fuming (in open air) liquids with an odor peculiar to acid chlorides. The acid chlorides were esterified with alcohol in diethyl ether in the presence of triethylamine for combining the liberated hydrogen chloride. This reaction, as well as all other operations

1/2

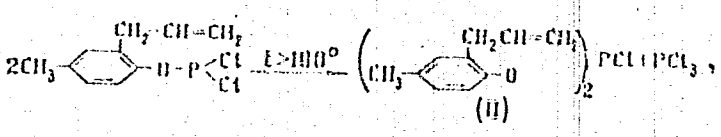
APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820011-5"

USSR

FRIDLAND, S. V., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, vol. 13, no. 12, 70, pp 1760-1761



(I)



(II)

for separating esters, were conducted in an inert gas atmosphere. The separated esters, including their properties, are listed in a table in the original article.

2/2

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--REACTION OF PHOSPHORUS PENTACHLORIDE WITH TETRAHYDROFURAN -U-

AUTHOR-(03)-FRIDLAND, S.V., KAMAY, G., VOLOBOYEVA, L.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 595-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHORUS CHLORIDE, FURAN, ANILINE, ORGANIC PHOSPHORUS COMPOUND, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0934 STEP NO--UR/0079/70/040/003/0595/0597

CIRC ACCESSION NO--AP0124594

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124594

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THIS ABSTR., R EQUALS 2, 3-DIHYDRO-4-FURYL. TO 50 G THF IN 250 ML C SUB6 H SUB6 WAS SLOWLY ADDED 433 G PCL SUB5 AT 5-10DEGREES, AND THE MIXT. KEPT OVERNIGHT AND TREATED WITH DRY SO SUB2 TO GIVE 77PERCENT 2,3-DIHYDRO-4-FURYLPHOSPHONIC DICHLORIDE, M. 50-1DEGREES, B SUB7 112DEGREES, WHICH WITH MEOH AND PYRIDINE GAVE RP(O)(OME) SUB2 54PERCENT, B SUB9 128-30DEGREES, D PRIME20 1.2313, N PRIME20 SUBD 1.4686; DI-ET ESTER, 49PERCENT, B SUB10 133-5DEGREES, 1.1431, 1.4612; DI-PR ESTER, 55.6PERCENT, B SUB9 151-3DEGREES, 1.0922, 1.4591; DIISO-BU ESTER 53DEGREES, 4PERCENT, B SUB8 157-8DEGREES 1.0504, 1.4576; DI-BU ESTER, 49.8PERCENT, B SUB5 155-7DEGREES, 1.0572, 1.4588; DIISOAMYL ESTER, 55.5PERCENT, B SUB9 179-91DEGREES, 1.0264, 1.4581; DIAMYL ESTER, B SUB5 170-1DEGREES, 1.0271, 1.4579. WHEN RPOCL SUB2 WAS HYDROLYZED AND THE RESULTING CRUDE ACID SOLN. TREATED WITH PHNH SUB2, IT GAVE THE MONOANILINE SALT, M. 108-9DEGREES. THF REACTS WITH 3 MOLES PCL SUB5 TO YIELD RPOCL SUB2 ABOVE, POCL SUB3, 2SOCL SUB2, AND 3 HCL, AFTER TREATMENT OF THE MIXT. WITH SO SUB2 AS INDICATED. THE INITIAL REACTION MUST BE RUN WITH VERY EFFECTIVE COOLING AND REQUIRES UP TO 2 DAYS FOR ELIMINATION OF HCL AT ROOM TEMP. FACILITY: KAZAN. KHIM.-TECHNOL. INST. IM. KIROVA, KAZAN, USSR.

UNCLASSIFIED

USSR

UDC 658.562:534.6

TSEKHANSKIY, K. R., and FRIDLYAND, V. I.

"A New, Reliable Apparatus for Operating Control of a Machine Vibration"

Moscow, Vibratsion. tekhnika (Vibration Engineering) 1972, pp 105-108 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika, No 1, 1973, Abstract No 1.32.423)

Translation: In the Central Scientific Research Institute of Technology and Machine Building a new steady-state apparatus, type AVK5-5 has been developed for the operating control of vibration of fuel pumps of power units and other machines, making it possible to perform measurement of the sweep of the vertical and transverse components of vibratory motion alternately at all points where measuring transformers have been installed. Four to eight two-component piezoelectric vibration-measuring transformers, type 2PA-4, four to eight two-channel inlet devices, one two-channel measuring unit, a standard self-registering multiple-point potentiometer type PSR-1, an indicator dial and a switch for the measuring point are included in the assembly of the apparatus. (2 illustrations)

1/1

USSR UDC: 533.697

FENDRIKOV, I. A., FRIDLAND, V. Ya.

"On the Problem of Improving the Efficiency of an Exit Cone"

Sb. nauch. tr. Kiyev. in-t inzh. grazhd. aviatsii (Collected Scientific Works of the Kiev Institute of Civil Aviation Engineers), 1970, vyp. 6, pp 82-85 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7B379)

Translation: An investigation is made of the effect which various forms of input velocity profile have on the effectiveness of a circular conical exit cone with aperture angle of ten degrees and degree of expansion of 3.7 when $R = (1.7\text{-}2.0)\cdot 10^5$ (for the input diameter). Analysis of the experimental data showed that the efficiency of the exit cone is appreciably dependent on the form of the input velocity profile and the intensity of its decay. Maximum exit cone efficiency was achieved when the velocity curve showed a high ratio U_{max}/U_{av} and when the velocity was increased close to the walls. Such a velocity profile has an inflection point, which is a necessary condition for its rapid decay. A. S. Malyutin.

1/1

USSR

UDC: 536.2

PETROV, V. A., PETROVA, I. I., NESHPOR, V. S., FRIDLENDER, B. A., KAPRALOV, V. K., BELIK, R. V., Institute of High Temperatures of the Academy of Sciences of the USSR, State Institute of Applied Chemistry

"Some Thermophysical Properties of Isotropic Pyrolytic Graphite"

Moscow, Teplofizika Vysokikh Temperatur, Vol 11, No 2, Mar/Apr 73, pp 308-313

Abstract: A study is done on the electrical resistance, thermal conductivity and radiative characteristics of pyrolytic graphite which lacks a preferred orientation of the crystallographic planes with respect to the deposition surface. The measurements were made on specimens with densities ranging from 1.76 to 2.19 g/cc over a wide temperature interval. The behavior of the properties as a function of density and temperature is explained in terms of peculiarities of the defect structure of isotropic pyrographite.

1/1

USSR

UDC 536.212

FRIDLENDER, B. A., NESHPOR, V. S., YERMAKOV, B. G., SOKOLOV, V. V., State Institute of Applied Chemistry, Leningrad

"Temperature and Heat Conductivity of Pyrolytic Titanium and Niobium Carbides and Titanium Nitride at High Temperature"

Minsk, Inzhenerno-Fizicheskiy Zhurnal, Vol 24, No 2, Feb 73, pp 294-296.

Abstract: Results are presented from measurement of the temperature conductivity and calculation of heat conductivity of monolithic specimens of $TiC_{0.94}$, $NbC_{0.77}$ and $TiN_{0.94}$, produced by chemical gas-phase deposition, in the temperature range from 1500 to 2200-2400°C. The specimens of titanium and niobium carbide had large-crystal columnar dendritic microstructure, the long axes of the crystals oriented perpendicular to the surface of deposition. The specimens of titanium nitride had similar microstructure, but were not dendritic. The temperature and heat conductivities of TiC and NbC are significantly lower than that of TiN, resulting from the significantly lower electrical conductivity of the carbides and the correspondingly lower contribution of electron heat transport, with similar contributions of lattice heat transport.

1/1

USSR UDC 536.2.023

FRIDLENDER, B. A., and NESHPOR, V. S., Institute of Applied Chemistry, Leningrad

"The Direction Dependence of High-Temperature Thermal Conductivity of Crystal-Oriented Pyrolytic Graphite"

Moscow, Teplofizika Vysokikh Temperatur, Vol 10, No 2, Mar-Apr 72, pp 313—317

Abstract: The vector effect of thermal conductivity of specimens of pyrolytic graphite (PG), 2.26 g/cm^3 density, was investigated by the phase method. The specimens were obtained by the chemical gas-phase method of precipitation by 400 °C with a high degree of primary orientation of the basal plane. They were cut from 12 mm thick PG plates under different angles θ between the directions of perpendiculars to the specimen's plane and the precipitation surface. The perpendicular to the surface of the specimen was coincident with the heat flow direction, the thickness of the

USSR

FRIDLENDER, B. A., and NESHPOR, V. A., Teplofizika Vysokikh Temperatur, Vol 10, No 2, Mar-Apr 72, pp 313-317

specimens was ~0.450—0.120 mm. For comparison , the thermal conductivity was investigated in the perpendicular direction to the precipitation surface of the pyrographite, which was subjected to thermomechanical processing and possessed a more perfect structure. The investigation results are discussed by reference to diagrams showing the temperature- and θ-dependences of the thermal conductivity of pyrographite and its calculated values in the directions of a- and c-axes. Five illustr., three formulas, one table, nine biblio. refs.

1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THERMAL CONDUCTIVITY OF PYROLYTIC ZIRCONIUM DIBORIDE AT HIGH TEMPERATURES -U-

AUTHOR-(03)-NESHPOR, V.S., FRIDLENDER, B.A., SHARUPIN, B.N.

COUNTRY OF INFO--USSR

SOURCE--INZH. FIZ. ZH. 1970, 18(3), 527-30

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--ZIRCONIUM BORIDE, THERMAL CONDUCTIVITY, CHEMICAL REDUCTION, REFRACTORY COMPOUND, POWDER METALLURGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0326 STEP NO--UR/0170/70/018/003/0527/0530

CIRC ACCESSION NO--AP0119313

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119313

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL DIFFUSIVITY ALPHA OF ZRB SUB2 LAYER (THICKNESS 0.3 MM), PREPD. BY THE CHEM. GAS PHASE REDN. OF ZR AND B HALIDES BY H IN VACUUM (10 PRIME NEGATIVE5 TORR) AT 1200DEGREES, WAS MEASURED AT 1500-2300DEGREES BY USING THE PHASE METHOD. THE VALUES OF ALPHA WERE USED FOR CALCG. THE THERMAL COND. LAMBDA WHICH DECREASED FROM 105 TO 95 W-M DEGREE AT 1500-2300DEGREES. THE DATA ARE COMPARED WITH LAMBDA VALUES OF SIMILAR TO 30 W-M DEGREE REPORTED FOR ZRB SUB2 SAMPLES PREPD. BY USING THE METHODS OF POWDER METALLURGY; THE REASONS FOR THESE DIFFERENCES ARE DISCUSSED.

UNCLASSIFIED

USSR

F

UDC 546.831'17:536.2.023

FRIDLENDER, B. A., NESHPOR, V. S., State Institute of Applied Chemistry

"The Temperature Conductivity of Pyrolytic Zirconium Nitride"

Moscow, Neorganicheskiye Materialy, Vol 6, No 5, May 70, pp 1004-1006

Abstract: The authors studied temperature conductivity of zirconium nitride obtained by means of chemical gas phase precipitation on a pyrographite base, from a vapor-gas mixture containing $ZrCl_4$, nitrogen, hydrogen, and argon at 1400°C. X-ray analysis showed that the product has only one phase of cubic zirconium nitride with a lattice period a=4.574 Å. The specimens obtained showed a coarsely crystalline, porous-free microstructure. Temperature conductivity was carried out by the phase method based on radiotechnical determination of phase differences between the periodic heat stream and temperature waves on the opposite surfaces of a thin sample. It was determined that both the temperature and heat conductivity of pyrolytic zirconium nitride decrease with temperature elevation in

1/2

USSR

FRIDLENDER, B. A., NESHPOR, V. S., Neorganicheskiye Materialy, Vol 6, No 5, May 70, pp 1004-1006

the temperature range studied -- 1500-2300°C. Such a functional relationship is typical of metallic conductors with low electroresistance. For comparison, a temperature conductivity study of zirconium carbide was carried out analogously and it was found that its temperature conductivity is very low and temperature-independent.

2/2

USSR

UDC: 621.396.6-181.5

TAREYEV, A. N., FRIDLENDER, B. I., POLYACHEK, G. P.

"Calculation of the Temperature Conditions of Microcircuits Mounted on Printed Circuit Boards (External Problem)"

Sb. nauchn. tr. po probl. mikroelektroniki. Mosk. in-t elektron. tekhn. (Collected Scientific Works on Problems of Microelectronics. Moscow Institute of Electronic Technology), 1970, vyp. 5, pp 79-80 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V182)

Translation: This paper deals with calculation of the temperature field of a printed circuit board with integrated microcircuits as heat sources. The external arrangement of the microcircuits on the board is analyzed from the standpoint of heat conditions. Resumé.

1/1

1/2 052 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--CERTAIN KINETIC EFFECTS IN CONTINUOUS MEDIA FLOWS -U-

AUTHOR-(03)-GALKIN, V.S., KOGAN, M.N., FRIDLENDER, O.G.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIDOSTI I GAZA, MAY-JUNE 1970, P 13-21. 7 REFS.

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--KNUDSEN PLASMA, GAS DYNAMICS, GAS FLOW, NAVIER STOKES EQUATION, DENSE PLASMA, FLOW KINETICS, ENTHALPY, MACH NUMBER, REYNOLDS NUMBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605008/F05 STEP NO--UR/0421/70/000/000/0013/0021

CIRC ACCESSION NO--AP0140021

UNCLASSIFIED

2/2 052 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140021

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEMONSTRATION OF THE NECESSITY AND VALIDITY OF USING BARNETT'S EQUATIONS AND SLIP CONDITIONS FOR DESCRIBING A WIDE CLASS OF MOTIONS OF A DENSE GAS (AT KNUDSEN NUMBERS APPROACHING ZERO). NAVIER STOKES EQUATIONS WITH ATTACHMENT BOUNDARY CONDITIONS ARE USUALLY VALID FOR DESCRIBING FLOWS OF A DENSE MEDIUM AT KNUDSEN NUMBERS APPROACHING ZERO. IN ORDER TO APPLY THE SOLUTION TOWARD HIGHER KNUDSEN NUMBERS, IT IS CUSTOMARY TO USE SLIP BOUNDARY CONDITIONS AND BARNETT EQUATIONS CONTAINING TERMS OF HIGHER ORDER WITH RESPECT TO THE KNUDSEN NUMBER. HOWEVER, GENERALLY SPEAKING THE RANGE OF APPLICABILITY (IN TERMS OF THE KNUDSEN NUMBER) OF THE BARNETT EQUATIONS IS THE SAME AS THAT OF THE NAVIER STOKES EQUATIONS OS THAT THE USE OF THE BARNETT TERMS YIELDS ONLY SMALL CORRECTIONS. THE PRESENT WORK DIRECTS ATTENTION TO THE EXISTENCE OF CONTINUOUS MEDIUM FLOWS WHOSE DESCRIPTION IN THE FIRST APPROXIMATION REQUIRES THE ALLOWANCE FOR KINETIC EFFECTS (BARNETT TERMS AND SLIP). CONSIDERATION IS GIVEN TO FLOWS WHERE THE CHARACTERISTIC CHANGE IN ENTHALPY IS MUCH LARGER THAN THE CHARACTERISTIC KINETIC ENERGY. DETAILED CALCULATIONS ARE MADE FOR CASES OF SLOW STATIONARY GAS MOTIONS UNDER CONDITIONS WHERE THE MACH AND KNUDSEN NUMBERS APPROACH ZERO AT A REYNOLDS NUMBER SMALLER THAN OR EQUAL TO ZERO. THE INFLUENCE OF THE KINETIC EFFECTS IS DEMONSTRATED FOR THREE ILLUSTRATIVE PROBLEMS.

UNCLASSIFIED

USSR

UDC 614.777:661.718.5

KLYASHCHITSKAYA, A. L. KRASOVSKIY, G. N., and FRIDLYAND, S. A.,
First Moscow Medical Institute imeni I. M. Sechenov

"Hygienic Evaluation of Industrial Effluents Containing Organosilicon Compounds"

Moscow, Gigyena i Sanitariya, No 1, 1970, pp 28-31

Abstract: Toxicological studies on polymethylhydro siloxane, sodium ethylsiliconate, and 10 other organosilicon compounds in the effluents of the Dankovskiy Chemical Plant showed that they are virtually nontoxic. The biological activity of the compounds is independent of the radical bound with silicon, and is determined by the length of the polymer chain and its molecular weight. Compounds with methyl, ethyl, and phenyl radicals as well as compounds whose organic radicals contain fluorine, chlorine, sulfur, or cyanogen, were nontoxic. The monomer A_3SiH, low-molecular-weight sodium siliconate, and hexamethylpolydimethylpolymethyl (trifluoropropyl) siloxane with a small number of structural units exhibited high biological activity. The main negative feature of the compounds is that they impart a disagreeable odor and taste to water.
1/1

Acc. Nr.: AP0029328 Ref. Code: UR 0240

PRIMARY SOURCE: Gigiyena i Sanitariya, 1970, Nr 1, pp 28-31

HYGIENIC ASSESSMENT OF CONDITIONS OF DISCHARGE OF INDUSTRIAL EFFLUENTS CONTAINING SILICON ORGANIC COMPOUNDS

Klyashchitskaya, A.L.; Krasovskiy, G.N.; Fridlyand, S.A.

Effluents from the production of silicon organic polymers have a complex compositions: organic solvents and silicon organic compounds are peculiar ingredients of their contamination. Toxicologic tests revealed biological inactivity of silicons containing methyl, ethyl and phenyl radicals, as well as groups of compounds whose organic radicals contained fluorine, chlorine, sulfur and cyan. Compounds with a small number of structural units had a high biological activity. The maximum permissible concentrations of the 13 investigated silicon organic polymers in water bodies were determined judging by the organoleptic index.

1/1

REEL/FRAME

19680900

USSR

UDC 669.018.295

BABIN, YU. A., FRIDLYANDER, I. N., KAMYSHKOV, A.S.

"Thermal Stability of Sintered Aluminum Powder"

Tr. Mosk. aviats. in-ta. (Works of Moscow Aviation Institute -- collection of works) 1971, vyp. 226, pp 156-165 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I676)

Translation: A study was made of the thermal stability of SAP-1 [sintered aluminum powder-1] sheets 2.0 and 2.5 mm thick. The sheets were obtained from a flat briquette undergoing degassing annealing at a temperature of 625±5° for 72 hours and cladded with AMts alloy 4-5% of the side thick. The Al_2O_3 content in the initial powder is ~8.3%. The total gas content in the sheets was ~3cm^3/100g. A study was made of the effect of long-term continuous heating at temperatures to 600° and also short-term heating at temperatures exceeding the melting point of the pure aluminum on the structure and properties of the material: in spite of the absence of a strict law, the tendency toward a reduction in strength when testing at a temperature of 350 and 500° after heating to 1000 hours at the same temperature is observed. The data on the material strength at 500° after annealing at 600° connected with polymorphic transformation of the Al_2O_3 at 550° from amorphous to the brittle crystal version deserves specinl attention.

1/2

USSR

BABIN, YU. A., et al. Tr. Mosk. aviats. in-ta., 1971, vyp. 228, pp 156-165

The test strength at increased temperatures varies little, and after holding at 600°, it even increases. The short-term holding of the alloy in the temperature range close to the melting point of aluminum leads to very perceptible increase in the heat resistance. Four illustrations, four tables, and a 6-entry bibliography.

2/2

USSR

UDC 669.715'725'721(088.8)

FRIDLYANDER, I. N., GULIN, A. N., SANDLER, V. S., YATSENKO, K. P., KOLESNIKOVA, V. I., POLYAKOV, YE. S., YUDIN, A. F.

"Deformable Alloy Based on Aluminum"

USSR Author's Certificate No 310946, filed 24 Mar 70, published 1 Oct 71 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I627P)

Translation: A deformable alloy based on aluminum is proposed with the following composition: 15-40% Be, 1.5-8% Mg, 0.2-2.5% Li, and Al for the rest. In order to increase the corrosion strength, 0.1-0.6% Si can be introduced into the alloy. In order to increase the strength and plasticity, up to 0.2% Zr, Mn, Cr, and Ti introduced separately or jointly can be added. The proposed alloy permits variation of the properties within broad limits: σ_B 40-65 kg/mm^2, δ 9-12%, ψ 8-13% (the pressed ingots after quenching and aging). The alloy containing 24.4% Be, 4.3% Mg, 1.9% Li, and the rest Al after heat treatment has γ 2.3 g/cm^3, E 13,650 kg/mm^2, σ_B 59.5 kg/mm^2, δ 11.3%, ψ 11.5%. The heat treatment conditions are as follows: quenching from 450°, 40 minutes and aging at 120°, 24 hours. The proposed alloy is obtained by the method of melting and casting in a vacuum and in an inert environment with subsequent deformations. Obtaining the intermediate products is possible by the powder metallurgy methods. The material can

1/2

USSR

FRIDLYANDER, I. N., et al., USSR Author's Certificate No 310946, filed 24 Mar 70, published 1 Oct 71

be used in rigid structural elements in which the defining factors are a combination of lightness, high rigidity with high strength at operating temperatures to 120-150° and under short-term effects, to 400°.

2/2

USSR

UDC 669.71:620.187

FRIDLYANDER, I.N., BARSUKOV, V.N., STEPANOVA, M.G., and SMIRNOVA, I.N., All-Union Scientific Research Institute of Aviation Materials

"Study of the Fine Structure and Recrystallization of SAP-1 Sheets"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 7, 1971, pp 13-15

Abstract: The fine structure of a powder, as well as the structure and texture of SAP-1 sheet (Sintered Aluminum Powder) were studied. The zone of coherent scattering and the magnitude of microdeformations were determined by the method of harmonic analysis of the Roentgen (111) line and (222) matrix shapes. With increasing degree of deformation the magnitude of the coherent scattering zone of cold rolled sheets (7.8% Al_2O_3) increases and this is related to the heating of the material in rolling. It follows from this that not only the distance between oxide particles, but also the magnitude of aluminum matrix blocks affect positively the strength properties of SAP-1 sheets. The results of a study of the advantageous orientation of sheets, deformed at 80% and annealed at 250-630°C with aging from 15 min to 10 hours are presented.

1/1

Acc. Nr: AP0054800 Abstracting Service: 6-70 Ref. Code:
INTERNAT. AEROSPACE ABST. UR 0129

I. N. FRIDLYANDER

A70-25912 # Zone and phase aging of aluminum alloys (Zonnoe i fazovoe starenie aliuminievykh splavov). I. N. Fridliander. *Metallovedenie i Termicheskaia Obrabotka Metallov*, no. 1, 1970, p. 2-5. 6 refs. In Russian.

Examination of the structural and property changes in aluminum alloys during aging. New notions, such as zone aging, phase aging, and coagulation during aging are introduced for estimating the character of the decomposition of the solid solution. It is pointed out that the terms 'natural' and 'artificial' aging can be used only in connection with external conditions of aging. Z.W.

1/1

REEL/FRAME
19832002

18

Acc. Nr: AP0043732 Abstracting Service: 5/70 INTERNAT. AEROSPACE ABST. Ref. Code: UR0226

A70-23124 # Study of structures and properties of alloys Al-Cr and Al-Fe obtained by an atomization method (Issledovanie struktur i svoistv splavov Al-Cr i Al-Fe, poluchennykh metodom raspyleniia). A. A. Briukhovets, N. N. Barbashin, M. G. Stepanova, and I. N. Fridlander (Moskovskii Aviatsionnyi Tekhnologicheskii Institut, Moscow, USSR). *Poroshkovaia Metallurgiia*, vol. 10, Jan. 1970, p. 108-111. In Russian.

Study of the effect of alloy elements on the structure and properties of sintered alloys Al-Cr and Al-Fe made of powders obtained by atomizing the melt superheated 100 C over the liquidus. It is found that chromium addition together with a high cooling rate of the liquid phase, a high crystallization rate, and a subsequent cooling of the powder, makes it possible to produce more homogeneous aluminum alloys than those to which iron is added.

Z.W.

Al 3

1/1

REEL/FRAME 19770138

18

Aluminum and Its Alloys

USSR F UDC 669.715:001.18

FRIDLYANDER, I. N.

"Basic Trends in the Development of Wrought Aluminum Alloys"

Moscow, Metallovedeniye, No 4, Apr 70, pp 44-51

Abstract: Hardening of aluminum alloys is achieved by various means: work hardening, heat treating, quenching from the liquid state, insoluble phase hardening, hardening with insoluble sintered aluminum powder additions, and the use of an aluminum matrix in composite materials. The term "quenching from the liquid state" was suggested in 1948; it means rapid cooling of alloys from a cooling state which results in solid solutions supersaturated with respect to the maximum possible equilibrium solubility in solid state. Work hardening is particularly applicable to alloys which cannot be hardened by heat treating. Considerable research is in progress on weldable alloys of the ternary system Al-Zn-Mg. The alloys possess

USSR

FRIDLYANDER, I. N., Metallovedeniye, No 4, Apr 70, pp 44-51

good corrosion resistance and are readily weldable, the strength of the weld joint being close to that of the parent metal. A table gives phases and their metastable forms causing the hardening of alloys during aging. For all age-hardenable aluminum alloys the various aging periods and the corresponding structures govern the mechanical, physical, technological, and corrosion properties. Extensive work is underway on alloys of the system Al-Cu-Mg for heat-resistant alloys designed for service at low temperature for tens of thousands of hours. Alloys have been recently developed with additions of manganese, zirconium, and chromium; for some of these alloys quenching from the liquid state is combined with simultaneous hardening using aluminum oxide particles. The various methods of aluminum hardening may be combined. At relatively low temperatures, the metastable phase modification S(Al_2CuMg) effects a high strength of the alloy; at maximum temperatures the Al_2O_3 phase ensures high heat resistance. Some aluminum alloys call for thermomechanical treatment. The specific conditions of deformation will either

2/3

USSR

FRIDLYANDER, I. N., Metallovedeniye, No 4, Apr 70, pp 44-51

retain the supersaturated solid solution of manganese, chromium, and other such elements in aluminum, or cause a favorable dispersion and distribution of decomposion products of these solutions in the process of deformation and subsequent heating for austenizing.

3/3

1/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--BASIC TRENDS IN THE DEVELOPMENT OF DEFORMED ALUMINUM ALLOYS -U-

AUTHOR--FRICLYANDER, I.N.

COUNTRY OF INFO--USSR

SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (4), 44-51

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINUM ALLOY, METAL DEFORMATION, COPPER CONTAINING ALLOY, MANGANESE CONTAINING ALLOY, LITHIUM CONTAINING ALLOY, ZINC CONTAINING ALLOY, MAGNESIUM CONTAINING ALLOY, SILICON CONTAINING ALLOY, MECHANICAL STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0909 STEP NO--UR/0129/70/000/004/0044/0051

CIRC ACCESSION NO--AP0132998

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820011-5"

2/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132998

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALLOYS OF THE FOLLOWING SYSTEMS ARE REVIEWED: AL-MG-SI, AL-CU-MG, AL-ZN-MG, AL-ZN-MG-CU, AL-CU-MN, AL-CU-LI, AND AL-LI-MG. THE MAX. STRENGTH IS OBTAINED WITH AL-ZN-MG-CU ALLOYS.

UNCLASSIFIED

USSR

UDC 620.18:620.17:669.71'720

FRIDLYANDER, I. N., YATSENKO, K. P., NEKRASOVA, G. A., SANDLER, V. S., SEMENOVA, Z. G., and GULIN, A. N.

"Laws of Variation of the Structure and Properties of Beryllium-Aluminum Alloys"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 7, 1970, pp 50-55

Abstract: This article contains a discussion of the laws of variation of the structure and properties of beryllium-aluminum hypereutectic alloys. Various amounts of magnesium were added to the alloy to produce various changes. By generalizing the results of x-ray micrography a diagram is constructed for the decomposition of a solid solution of aluminum-beryllium alloy with 30% Be and 5% Mg. The variation in mechanical properties of the same alloy is plotted for aging at 200°C and at 250°C. The strength of aluminum-berillium alloys as a function of the distance between the B-phase particles (the distance between the beryllium particles) is also plotted for Al-Be and Al-Be-Mg. The mechanisms of all these variations in structure and properties are discussed in detail.

1/1

UDC 669.715(031)

USSR

KVASOV, F. I., FRIDLYANDER, I. N., Editors

"Commercial Malleable, Sintered and Casting Aluminum Alloys"

Promyshlennye Deformiruemye, Spechennye i Liteynye Alyuminievye Splavy [English Version Above], Moscow, Metallurgiya Press, 1972, 552 pp.

Translation of Annotation: This book describes the structure and properties of all commercial malleable, sintered and casting aluminum alloys. The alloys are divided into groups as functions of their properties, purpose and chemical composition.

Extensive experience is summarized on the creation of new alloys, as well as the study and refinement of standard alloys. The conclusion of the book presents detailed comparative data on the mechanical properties at room temperature, high and low temperatures, the physical and corrosion properties of malleable, casting and sintered aluminum alloys.

The book is designed for engineering-technical and scientific workers in the metallurgical, machine building, defense, motor vehicle, shipbuilding and other industries. It may be useful to university students as well. 240 Figures; 244 Tables; 548 Biblio. Refs.

USSR

KVASOV, F. I., FRIDLYANDER, I. N., Promyshlennye Deformiruemye, Spechennye i Liteynye Alyuminievye Splavy, Metallurgiya Press, 1972, 552 pp.

TABLE OF CONTENTS

2/7

USSR

KVASOV, F. I., FRIDLYANDER, I. N., Promyshlennye Deformiruemye, Spechennye i Liteynye Alyuminievye Splavy, Metallurgiya Press, 1972, 552 pp.

1/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--INFLUENCE OF 5,BROMODEOXYURIDINE ON THE DIFFERENTIATION OF MUSCLE TUMOR CELLS IN A MONOLAYER CULTURE -U-

AUTHOR-(02)-FRIDLYANSKAYA, I.I., ROLLE, N.N.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA 1970, 12(5), 684-6

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUMOR, MUSCLE TISSUE, MYOGENESIS, CULTURE MEDIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0273 STEP NO--UR/9053/70/012/005/0684/0686

CIRC ACCESSION NO--AP0134078

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134078

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MUSCLE TUMOR CELLS GROWN ON MEDIA CONTG. 5,ERCMODEOXYURIDINE (1 MUG-ML) DEVELOPED FEWER POLYKARYOCYTES THAN THOSE GROWN ON NORMAL MEDIA. APPARENTLY THE URIDINE ANALOG INHIBITED MYOGENESIS BY THE MUSCLE CELLS. FACILITY: . LAB. GENET. TUMORS CELLS, INST. CYTOL., LENINGRAD, USSR.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--AMYLASE INDUCTION IN L CELLS. EFFECT OF THE MODE OF CELL HARVESTING ON THE AMOUNT OF REGISTERED AMYLASE ACTIVITY -U-

AUTHOR--PODGAYETSKAYA, D.YA., GERSHUN, V.A., IGNATOVA, T.N., BLINOVA, M.I., FRIDLYANSKAYA, I.I.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA 1970, 12(2), 253-6

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TISSUE CULTURE, CULTURE MEDIUM, AMYLASE, BIOSYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0943 STEP NO--UR/9053/70/012/002/0253/0256

CIRC ACCESSION NO--AP0102884

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102884

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INCREASED AMYLASE ACTIVITY IN L CELLS AFTER ADDN. OF STARCH TO THEIR NUTRIENT TRYPSIN CONTG. MEDIUM INDICATE SUBSTRATE INDUCTION OF ENZYME SYNTHESIS. THE SIZE OF THE REGISTERED EFFECT COULD BE CHANGED BY DIFFERENT METHODS OF HARVESTING CELLS FROM THE GLASS. DURING MECH. OR SIMPLE HARVESTING, INDUCTION DECREASED.

UNCLASSIFIED

USSR

UDC: 669.295:620.1

FRIDMAN, A. SH.

"The Effect of Smelting Parameters on the Structure and Chemical Uniformity of Titanium Alloy Ingots"

Moscow, Tsvetnyye Metally, No 10, Oct 73, pp 46-48

Abstract: Higher force arc current is one way of intensifying the processes for obtaining titanium alloy ingots in vacuum arc furnaces with consumable electrodes. An important particular of vacuum smelting is that the smelting of the metal and its crystallization occur simultaneously. Thus the factors which determine the conditions for crystallization to a great extent depend on smelting parameters. The analysis of the heat processes taking place during ingot hardening was used as the basis for studying the effect of the rate of smelting on the basic parameters of crystallization. It was shown that the depth of the basin (H) is related to the rate of deposition by the following equation: $H=K(1-S)v$, where K is the coefficient which takes into consideration the thermophysical properties of titanium and of the ingot diameter, S is the axial heat flow portion, and v is the rate of deposition in kg/sec. A study of the temperature field of the ingot showed that the average linear rate of crystallization does not depend significantly on the deposition rate and approaches the limit at a hole depth equal to or greater than the diameter.

1/2

USSR

FRIDMAN, A. SH., Tsvetnyye Metally, No 10, Oct 73, pp 46-48

The limit rate of crystallization during smelting in a vacuum depends only on the ingot diameter (inversely proportional to it). The width and the height of the transition zone of the ingot are determined by the temperature interval of crystallization and by the ingot cooling intensity. These relationships do not make it possible to predict the structure, chemical uniformity or other properties of the ingot. Under vacuum arc smelting conditions, the rate of ingot deposition affects the nature of crystallization and is subject to control within broad limits. The observed axial precipitation porosity can be eliminated by the selection of optimal smelting dimensions.

2/2

USSR

UDC 537.563:547.23

FRIDLYANSKIY, G. V., PAVLENKO, V. A., VINOGRADOV, B. A., GRISHIN, N. N., BOGOLYUBOV, G. M., and PETROV, A. A., Leningrad Technological Institute imeni Lensovet

"Organic Derivatives of Group V-VII Elements. XX. Exact Composition of Ions in Mass Spectra of Alkylphosphine Sulfides and P=S Bond Strength"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1707-1709

Abstract: The article describes results of the measurement of mass numbers of ions in mass spectra for triethylphosphine sulfide and tetraethyldiphosphine disulfide on a double-focusing mass spectrometer. The dissociation energy of the P-P bond in tetraethyldiphosphine disulfide was previously found by the authors from the appearance potential of the ion $(M/2)^+$. Precise measurement of the mass in the present article confirms the composition assigned to this ion. The dissociation energy of the P=S bond was found to be equal to 3.7 ev or 85 kcal/mole, which is in satisfactory agreement with the value obtained from the thermal effect of the tripropylphosphine oxidation reaction (91.6 kcal/mole). Determination of the exact composition of ions in the mass spectra of alkylphosphine sulfides shows the resistance of the P=S bond to the action of an electron impact. This resistance is characteristic of the chemical bonds between atoms of Group V and VI elements possessing unshared electron pairs.

USSR UDC: 51

FRIDMAN, A. A., LITVAK, B. G., RAPPOPORT, A. M.

"Absolutely Integral Linear Programming Problems"

Moscow, Issled. po diskretnoy mat.--sbornik (Studies in Discrete Mathematics--collection of works), "Nauka", 1973, pp 27-40 (from RZh-Matematika, No 8, Aug 73, abstract No 8V507 by Yu. Finkel'shteyn)

Translation: Papers by B. G. Litvak and A. M. Rappoport (RZhMat, 1971, 1V447, 8V592) investigated the reduction of linear programming problems having a whole-number optimum solution for any whole-number vectors of limitations (absolutely integral problems) to extremum problems on networks (on circulation or flow of minimum cost). In RZhMat, 1971, 1V447 the authors introduced the concepts of reducibility of problems, M-families of vectors, intermediate representation and representation of the flow along the arc of a network, and also the concept of the problem of circulation of minimum cost T(P) corresponding to the linear programming problem P. It was found, in particular, that: a) Linear programming problem P has a corresponding problem on circulation of minimum cost T(P) if and only if the rows of its matrix of limitations form an M-family. b) If the rows of

1/2

USSR

Fridman, A. A. et al., Issled. po diskretnoy mat., "Nauka", 1973, pp 27-40

the matrix of limitations of problem P form an M-matrix, then P reduces to a problem on circulation of minimum cost, and specifically to T(P).

In this paper, with certain natural assumptions relative to problems on circulation of minimum cost, the necessary and sufficient conditions are found for reducibility of linear programming problems to a problem of circulation of minimum cost, and a more extensive class of absolutely integral problems which permit network formulation is described.

2/2

USSR

FRIDMAN, A. A.

"Problems in Finite Sets and Boolean Method of Their Solution"

Ekonomika i mat. metody [Economics and Mathematical Methods], 1973, 9, No 2, pp 330-335 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973 Abstract No 8 V497 by Yu. Finkel'shteyn)

Translation: Suppose we are given a finite set of elements $E=\{e_1,\ldots,e_k\}$ and property P, which certain subsets of E have. These subsets (in this case) are called P subsets. It is frequently more convenient to speak not of subset $T\subset E$, but of its characteristic vector $x^T=(x_1,\ldots,x_k)$, where $x_i=1$, if $e_i\in T$, and $x_i=0$ if $e_i\notin T$. Obviously, T and x^T unambiguously define each other, where $T=\bigcup_1 x_i e_i$. The P set $T\subset E$ is called minimal (or maximal) if it does not contain (or is not contained by) any other P set. P set $T\subset E$ is called absolutely minimal (or maximal) if there is no P set with a smaller (or larger) number of elements than in T. Obviously, the absolutely minimal (or maximal) P set is at the same time a minimal (or maximal) P set.

USSR

FRIDMAN, A. A., Ekonomika i mat. metody, 1973, 9, No 2, pp 330-335

Suppose further that property P is Boolean and positive, i.e., a set has property P when and only when its characteristic vector $x=(x_1, \ldots, x_k)$ satisfied the system of positive (containing no negations of variables) Boolean equations $\phi_i(x)=1$, $i=1,\ldots, s$, or, which amounts to the same thing, one positive Boolean equation

$$\varphi(x) = \bigwedge_{i}^{s} \varphi_i(x) = 1. \qquad (1)$$

Then, obviously, if T is a P set, any set containing T will also be a P set. Therefore, the problem naturally arises of finding all minimal (in particular, absolutely minimal) P sets from E.

USSR

FRIDMAN, A. A., Ekonomika i mat. metody, 1973, 9, No 2, pp 330-335

Theorem 1. $\phi(x^0)=1$ when and only when $T_0=\bigcup_1^k x_i^0 e_i$ is a P set.

Result. The set of all P sets from E coincides to the class of all sets T_x, the characteristic vectors of which are solutions of (1).

Suppose $\phi_M(x)$ is a minimal disjunctive normal form (D.N.F.) for $\phi(x)$, i.e., $\phi_M(x)=\bigvee_1^r K_i$, where $K_i=x_{i_1}x_{i_1}\ldots x_{i_{n(i)}}$. Obviously, (1) is equivalent to the equation

$$\varphi_M(x)=\bigvee_1^r K_i=1. \qquad (2)$$

USSR

FRIDMAN, A. A., Ekonomika i mat. metody, 1973, 9, No 2, pp 330-335

Solution x^0 of equation (2) is called minimal if in (2) we can find an elementary conjunction K_i, such that

$$x_j^0 = \begin{cases} 1, \text{ if } j \in \{i_1, i_2, \ldots, i_{h(i)}\}, \\ 0, \text{ otherwise.} \end{cases} \quad (3)$$

In this case, it is said that x^0 corresponds to conjunction K_i. The minimal solution x^0 of equation (2) is called absolutely minimal if, no matter what the minimal solution x, the following inequality obtains:

USSR

FRIDMAN, A. A., Ekonomika i mat. metody, 1973, 9, No 2, pp 330-335

Lemma 1. Vector x is an absolutely minimal solution of (2) when and only when the corresponding elementary conjunction K_α has the least length of all others in (2).

Theorem 2. Vector x^0 is the minimal solution of (2) when and only when $T_0=\bigcup_1^k x_i^0 e_i$ is a minimal P set.

Result. The following statements are equivalent: a) vector x^0 is the absolutely minimal solution of (2); b) conjunction K_α corresponding to vector x^0, has the least length of those in (2); c) the P set $T_0=\bigcup_1^k x_i^0 e_i$, corresponding to vector x^0, is absolutely minimal. Theorem 2 and its result provide a method of solution of the problem of determination of all minimal (particularly absolutely minimal) P sets from E. To do this, the property of P must be used to construct its characteristic function $\phi(x)$, then its minimal D.N.F. $\phi_N(x)$ must be found. The elementary conjunctions

5/6

USSR

FRIDMAN, A. A., Ekonomika i mat. metody, 1973, 9, No 2, pp 330-335

K_α and $\phi_M(x)$ unambiguously define all minimal solutions of (2) and, consequently, all minimal P sets. The elementary conjunctions from $\phi_M(x)$ of least length determine all absolutely minimal P sets.

As an example, one problem from graph theory with different applications is studied.

The case is discussed when the P set is Boulean and negative, i.e., its characteristic vector $x=(x_1,\ldots,x_k)$ satisfies the system of negative (containing only negations of variables) equations $\phi_i(x)=1$, $i=1,\ldots,s$. A number of statements are produced similar to those presented. A number of examples of problems in finite sets are presented, for which this plan is suitable, and the form of the corresponding function $\phi(x)$ is written for them (without proof). Nothing is stated concerning the effectiveness of this plan.

6/6

USSR

FRIDMAN, A. A., LITVAK, B. G., RAPPOPORT, A. M.

"Absolutely Integer Problems in Numerical Programming"

Issled. po diskretnoy mat. [Studies in Discrete Mathematics -- Collection of Works], Moscow, Nauka Press, 1973, pp 27-40 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V507 by Yu. Finkel' shteyn)

Translation: Earlier works by B. G. Litvak and A. Am. Rappoport (RZHMat, 1971, 1V447; 8 V592) have studied the reduction of linear programming problems with integer optimal solutions with any integer vectors of limitations (absolutely integer problems) to extreme problems in a network (circulation or flow of minimal costs). In (RZHMat, 1971, 1V447), the concepts of reducibility of problems, M sets of vectors, intermediate representation and representation of the flow along a line of a network were introduced, as well as the concept of the problem of circulation at minimum cost T(b) corresponding to linear programming problem P. In particular, it has been established that: a) linear programming problem P has a corresponding problem of circulation at minimal cost T(P) when and only when the rows of its matrix of limitations form a M set. b) If the rows of a matrix of limitations of problem P form a M set, P can be reduced

1/2

USSR

FRIDMAN, A. A., LITVAK, B. G., RAPPOPORT, A. M., Issled. po diskretnoy mat., Moscow, Nauka, Press, 1973, pp 27-40

to a problem of circulation at minimum cost, namely to T(P).

In this work, with certain natural assumptions concerning problems of circulation a minimum cost, necessary and sufficient conditions are found for convergence of a linear programming problem to a problem of circulation at minimum cost, and also a broader class of absolutely integer problems is described, allowing a network statement.

2/2

UDC 669.3 536.425

USSR

ROZENBERG, V. M., TEPLITSKIY, M. D., and FRIDMAN, A. A., State Scientific Research and Planning Institute of Alloys and Nonferrous Metal Processing, Moscow

"Structure and Properties of Aging Copper-Nickel-Base Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 326-331

Abstract: The structure and properties of four complexly alloyed copper alloys (Cu-Ni-Mn-Cr-Al) were experimentally investigated. A stratification of the solid solution into two isomorphic phases with a phase-centered cubic lattice takes place on aging, and a periodic structure develops. In two of the alloys, there is a simultaneous separating out of particles of the third phase. These separations do not contain Mn. The mechanical properties and electric resistances of the alloys after hardening are discussed by reference to tabulated data and diagrams. The observed high degree of hardening in these compositions is explained by the correlation of the periodic structure with the third phase. Four figures, three tables, ten bibliographic references.

1/1

1/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--MOSSBAUER STUDY OF THE THERMOMAGNETIC TREATMENT OF TICONAL ALLOYS -U-

AUTHOR-(05)-POVITSKY, V.A., GRANOVSKY, YE.B., FRIDMAN, A.A., MAKAROV, YE.F., PASHKOV, P.P.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, FEB. 1970. 29, (2), 247-251

DATE PUBLISHED----FEB70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--ALLOY, MOSSBAUER EFFECT, MOSSBAUER SPECTRUM, SPECTROSCOPIC ANALYSIS, MAGNETIC PROPERTY, METAL HEAT TREATMENT, X RAY ANALYSIS/(U)TICONAL ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0212 STEP NO--UR/0126/70/029/002/0247/0251

CIRC ACCESSION NO--AP0129468

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129468

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF THERMOMAGNETIC TREATMENT (ISOTHERMAL QUENCHING IN A MAGNETIC FIELD) ON THE STRUCTURE AND PROPERTIES OF TWO TICONAL ALLOYS WERE STUDIED BY A TECHNIQUE BASED ON THE MOSSBAUER EFFECT. MOSSBAUER SPECTROSCOPY WAS EMPLOYED IN CONJUNCTION WITH X RAY DIFFRACTION TO TRACE THE BEHAVIOUR OF THE ALLOYS AT VARIOUS STAGES OF HEAT TREATMENT. IN THE FIRST STAGE OF AGEING AFTER QUENCHING IN A MAGNETIC PHASES OF THE ALLOY TOOK PLACE; IN THE SUBSEQUENT STAGE THE DEGREE OF ORDER OF THE WEAKLY MAGNETIC PHASE STARTED INCREASING.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--GASES IN SOME MERCURY DEPOSITS IN THE NORTHWESTERN CAUCASUS AND TYPES OF NATURAL GAS DELIVERY INTO MINE FACES -U-
AUTHOR-(02)-FRIDMAN, A.I., PLOTNIKOV, I.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., GEOL. RAZVED. 1970, 13(1), 79-85

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--MINING ENGINEERING, SAFETY ENGINEERING, NATURAL GAS, HEXANE, CARBON DIOXIDE, HYDROGEN, NITROGEN, HELIUM, ARGON, MERCURY, MINERAL DEPOSIT, QUALITATIVE ANALYSIS, QUANTITATIVE ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605060/F03 STEP NO--UR/0151/70/013/001/0079/0085

CIRC ACCESSION NO--AT0144411

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AT0144411

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NATURAL GAS (HEXANE, CO SUB2, H, N, H SUB2 S, HE, AND AR) OCCURRING WITH HG MINERALIZATION IN SANDSTONE, CONGLOMERATE, AND GRAVEL IS STUDIED. THE MODE OF MIGRATION AND LOCALIZATION VARIES WITH THE TYPE OF CEMENTING MATERIAL. QUANT. AND QUAL. ANALS. OF GAS LEAKAGE ARE STUDIED TO CLASSIFY THE METHOD OF DELIVERY. FACILITY: MOSK. GEOLOGORAVZED. INST. IM. ORDZHONIKIDZE, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 577.1:615.7/9

ZALESOV, V. S., FRIDMAN, A. L., IVSHINA, T. N., IVSHIN, V. P., TARTAKOVSKIY, V. A., PLAKSINA, A. N., and BOLTIK, T. V.

"Synthesis and Study of the Physiological Activity of Organonercury Nitro Compounds. I. Analysis of the Molecular Complexes of bis-(Trinitromethyl)-mercury"

Izv. Yestestvennonauchn. in-ta pri Permsk. un-te (News of the Institute of Natural Sciences, Perm University), 1970, 14, No 10, pp 159-168 (from RZh-Biologicheskaya Khimiya, No 9, May 71, Abstract No 9 F1876 from the résumé)

Translation: Synthesized molecular complexes of bis-(trinitromethyl)-mercury with diethyl-N-nitrosamine, diethylsulfone, dimethylsulfoxide, tetrahydrofurane, dioxane, and hexamethylenetetramine were found to be lacking in neurotropic, anticonvulsive, and antitremor action in mice and rats but possessing weak antimicrobial activity (E. coli, staphylococci) and high toxicity for mice after intraperitoneal injection (LD_{50} 14.8 to 24.5 mg/kg or peroral administration (55 to 124 mg/kg) and for rats after peroral administration (51.4 to 305 mg/kg). Two preparations at toxic doses manifested weak analgesic action.

1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--BEHAVIOR OF DIALKYLNITROSAMINES DURING OXIDATION AND NITRATION -U-
AUTHOR-(03)-MUKHAMETSHIN, F.M., FRIDMAN, A.L., NIKOLAYEVA, A.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(5), 928-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMINE DERIVATIVE, OXIDATION, NITRATION, SULFURIC ACID, NITRIC ACID, NITROSAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1323 STEP NO--UR/0360/70/006/005/0928/0929

CIRC ACCESSION NO--AP0134997

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134997

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF (NN(CH SUB2 R) SUB2 (I) WITH 96PERCENT HNO SUB2, HNO SUB2-H SUB2 SO SUB4 MIXT., OR NITROUREA H SUB2 SO SUB4 MIXT. GAVE IS LESS THAN OR EQUAL TO 91PERCENT O SUB2 NN(CH SUB2 R) SUB2 (R IS C(NO SUB2) SUB3, C(NO SUB2) SUB2 CL, C(NO SUB2) SUB2 ME, OR C(NO SUB2) SUB2 CH SUB2 CH SUB2 CO SUB2 ME). I, IN CONTRAST TO UNSUBSTITUTED NITROSAMINES, ARE STABLE TOWARDS CF SUB3 CO SUB3 H.

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--N,HALO,N,NITRAMINES. I. SYNTHESIS AND SOME PROPERTIES OF N,CHLORO,N,NITRAMINES -U-

AUTHOR-(03)-IVSHIN, V.P., FRIDMAN, A.L., NOVIKOV, S.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 640-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITRATION, ORGANIC NITRO COMPOUND, CARBAMATE, AMINE, CHEMICAL SYNTHESIS, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1785 STEP NO--UR/0062/70/000/003/0640/0644

CIRC ACCESSION NO--AP0123582

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123582

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NITRATION OF ((3,3,DINITROBUTYL)METHYL) CARBAMATE AND HYDROLYSIS OF THE PRODUCT WITH NH SUB4 OH GAVE 74PERCENT 3,3,DINITROBUTYLNITRAMINE, M. 38DEGREES. SIMILARLY WAS PREPD. FROM 2,2,DIAMINODIETHYL ETHER 85PERCENT 2,2 PRIME DINITRAMINODIETHYL ETHER, M. 65-6DEGREES. PASSING CL INTO A SOLN. OF A NITRAMINE IN AQ. NAOH AT 0-5DEGREES AND SEPN. OF THE PPT. PERIODICALLY GAVE THE FOLLOWING: (SHOWN ON MICROFICHE). I AND NAN SUB3 IN H SUB2 O,ME SUB2 CO GAVE AFTER LOSS OF GASEOUS PRODUCTS 53PERCENT (CH SUB2 NHNO SUB2) SUB2, M. 176DEGREES. I HEATED IN ETOH GAVE 100PERCENT SAME PRODUCT; AT ROOM TEMP. REACTION WITH ETOH REQUIRED 1-2 HR. I AND 36PERCENT FORMALIN AT 70DEGREES 5 MIN GAVE 96PERCENT (CCH SUB2,N(NO SUB2) CH SUB2 OH) SUB2, M. 82-4DEGREES; REACTION WITH 10PERCENT CH SUB2 O GAVE HN(NO SUB2) CH SUB2 CH SUB2 N(NO SUB2) CH SUB2 OH.

FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECT OF THE NATURE OF SUBSTITUENTS ON THE FORMATION OF A SYDNONIMINE RING -U-

AUTHOR-(03)-MUKHAMETSHIN, F.M., FRIDMAN, A.L., NIKOLAYEVA, A.D.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (1), 125

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SUBSTITUENT, IMINE, ORGANIC NITRO COMPOUND, HETEROCYCLIC BASE COMPOUND, CYANIDE, HYDROLYSIS, CHEMICAL REACTION MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0744 STEP NO--UR/0409/70/000/001/0125/0125

CIRC ACCESSION NO--AP0119651

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119651

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. (O SUB2 N) SUB3 CCH SUB2 N(NO)CH SUB2 CH (I), M. 59-60DEGREES, AND (O SUB2 N) SUB2 C(CH SUB2 CH SUB2 N(NO)CH SUB2 CN) SUB2 (II), WERE PREPD. AND REACTED WITH HCL IN MEOH AT ODEGREES. THUS, II GAVE BISSYDNONIMINE (III), M. 217-18 (DECOMP.); WHERE I GAVE (O SUB2 N) SUB3 CCH SUB2 N(NO)CH SUB2 C(OME):NH.HCL (IV), M. 88-90DEGREES (DECOMP.). HYDROLYSIS OF IV GAVE (O SUB2 N) SUB3 CCH SUB2 N(NO)CH SUB2 CO SUB2 ME (V), M. 41-2DEGREES, WHICH WAS CONVERTED TO THE CORRESPONDING N,NITRO ACID (VI) VIA HNO SUB3 OXIDN. OF THE ESTER (V).

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820011-5"

1/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--REACTION OF BIS(TRINITROMETHYL)MERCURY WITH DIAZO COMPOUNDS -U-

AUTHOR-(05)-ERIDMAN, A.L., IVSHIN, V.P., IVSHINA, T.N., TARTAKOVSKIY, V.A., NOVIKOV, S.S.

COUNTRY OF INFO--USSR

F

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 729

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC NITRO COMPOUND, ORGANOMERCURY COMPOUND, AZO COMPOUND, NITRILE, ORGANIC SYSNTHESIS, COMPLEX COMPOUND, IR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0747 STEP NO--UR/0062/70/000/003/0729/0729

CIRC ACCESSION NO--AP0124417

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124417

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MIXING ((O SUB2 N) SUB3 C) SUB2 HG (I) WITH PH SUB2 CN SUB2 OR DIAZOFLUORENE IN ET SUB2 O GAVE HG, N, AND 14PERCENT PH SUB2 C:C(NO SUB2) SUB2, M. 148-9DEGREES, OR 43PERCENT 1,1,DINITRODIPHENYLENEETHENE, M. 184-5DEGREES, ALONG WITH PH SUB2 CO OR FLUORENONE, RESP. THUS I MAY BE USED FOR SYNTHESIS OF GEM DINITROALKENES. THE LATTER WERE ALSO FORMED FROM SIMILAR REACTION OF I DIOXANATE, BUT THE EVOLUTION OF N IN THIS CASE WAS LESS ENERGETIC. ATTEMPTS TO USE A MORE STABLE DIAZO COMPD., SUCH AS DIAZODIMEDONE, GAVE ONLY ITS 1:1 COMPLEX WITH I, M. 129-30.5DEGREES, WHOSE IR SPECTRUM WAS DESCRIBED. FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSKOW, USSR.

UNCLASSIFIED

CIRC ACCESSION NO--AP0050475
UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AP0050475
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADDN. OF 0.2-0.3PERCENT RARE EARTH METALS REDUCED THE TENDENCY TO FLAKE FORMATION TO 215, WHILE IMPROVING THE DEGREE OF FINENESS OF NONMETALLIC INCLUSIONS.

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SOLUTION FORMATION OF MIXED COMPOUNDS OF ZINC COMPLEXONATES WITH AMINES AND SULFUR CONTAINING LIGANDS -U-
AUTHOR-(03)-LASTOVAKIY, R.P., FRIDMAN, A.YA., DYATLOVA, N.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 701-6

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ZINC COMPLEX, AMINE, ORGANIC SULFUR COMPOUND, ACETATE, PYRIDINE, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1607 STEP NO--UR/0078/70/015/003/0701/0706

CIRC ACCESSION NO--AP0112601
UNCLASSIFIED

USSR

UDC: 539.3

FRIDMAN, B. P.

"Design of Type FDSD Selector Units for Measurement Complexes with Frequency Conversion of the Parameter Tested for Study of Mechanical Systems"

Tr. Ufim. Aviats. In-ta [Works of Ufim Aviation Institute], 1971, No 36, pp 64-78 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 3, 1973, Abstract No 3.32.378)

Translation: Frequency-selector devices used for multiplication of synchronously controlled differential-component detector units provide a number of technical and economic advantages when used in dynamic deformation test apparatus in comparison with other devices designed for the same purpose. The lack of analysis and corresponding methodology did not allow these devices to be designed earlier. Calculation relationships are presented for devices of this type, produced by study and development of a general methodology of design of new selecting units. 4 figures, 5 biblio. refs.

1/1

Measuring, Testing, Calibrating

USSR

UDC: None

FRIDMAN, B. P.

"Device for Measuring Wall Thicknesses in Hollow Electrically Conducting Objects"

Moscow, Otkrytiya. izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 12, 1973, p 113, No 371412

Abstract: This device is especially convenient for objects of paramagnetic and diamagnetic materials whose inner hollows are hard to reach. It consists of two feelers, each mounted on rollers, one for the inner and the other for the outer surface of the object. The second is a magnet. Both feelers are connected to an electrical meter. A diagram of the device is given.

1/1

USSR

UDC 576.858.75.095.5.097.5

BICHURINA, M. A., NIKITINA, L. YE., and FRIDMAN, E. A., Leningrad Scientific Research Institute of Epidemiology and Microbiology Imeni Pasteur

"Utilization of the Method of Differentiating Antibodies of Different Molecular Weight for Determining the Extent of Antigenic Differences Between Influenza Virus Variants"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 72, pp 529-532

Abstract: White rats were successively immunized with different influenza virus variants at intervals of 1.5-2 months. Blood samples were collected repeatedly and, by means of a sulfhydryl reagent, the antibodies were differentiated into two groups of different molecular weight: 19S and 7S. Immunologically significant differences were observed between influenza A2/Hong Kong/68 virus and the preceding variants of influenza A2 virus. The differences found between A2/57 and A2/65 were less pronounced. It is suggested that the presented method of differentiating related antigens on the basis of immunological memory may be tested on a wider range of antigens.

1/1

USSR UDC 669.215.089.68:543.42

GUSARSKIY, V. V., FRIDMAN, G. I., and TIMOFEYEVA, L. N.

"Principles for the Synthesis of the Composition of Standard Specimens for the Spectral Analysis of Aluminum Base Alloys"

V Sb. "VII Ural'sk. Konf. po Spektroskopii, 1971. Vyp. 1" [In the Collection "Seventh Ural Conference on Spectroscopy, 1971. No 1"], Sverdlovsk, 1971, pp 84-86 (from Referativnyy Zhurnal, No 10, Oct 72. 32. Metrologiya i Izmeritel'naya Tekhnika. Single Issue. Abstract No 10.32.996 by V. S. K.)

Translation: The requirements are listed which have to be considered in projecting the compositions of standard specimens for spectral analysis: correspondence of real alloys by chemical composition, presence of the interval of concentrations beyond the scope of the All-Union State Standard of the actual alloy, stability of the sum of concentrations of the alloy components in all specimens of the complex, provision of the control of the maximum quantity of brands of alloys by means of the minimum number of types of standard specimens. Projecting the chemical composition of different standard specimens requires that the accompanying admixtures, which are not provided by the All-Union State Standard for the given series of alloys, also be considered. The composition is given of the 69 complex of the

1/2

USSR

GUSARSKIY, V. V., et al., V Sb. "VII Ural'sk. Konf. po Spektroskopii, 1971. Vyp. 1" pp 84-86 (from Referativnyy Zhurnal, No 10, Oct 72. 32. Metrologiya i Izmeritel'naya Tekhnika. Single Issue. Abstract No 10.32.996 by V. S. K.)

standard specimen for spectral analysis of alloys of types D-20, AK-6, V-65, and D-18. The unique graduation graph for the determination of manganese is presented. Each point on graduation graphs represents the average of 10 parallel determinations. The investigation of prepared standard specimens has demonstrated the rightfulness of the "group" method of grouping standards for aluminum alloys. The standard specimens of the 69 complex and of the alloy Duralumin show for their analysis in all elements unique graduation graphs. One illustration, one table.

2/2

USSR

UDC 621.395.625.6

DERYUGIN, L.N., KOMOTSKIY, V.A., FRIDMAN, G.KH.

"Characteristics Of Thin-Film Metal Matrices For Laser Beam Inscription"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 6(12), 1972, pp 89-95

Abstract: The paper presents theoretical evaluations and the results of experimental studies of the sensitivity and resolution powers of thin-film metal matrices when inscription is performed by evaporation of a metal film under the influence of laser radiation. The limiting possibilities of the matrix are estimated with respect to sensitivity, resolution power, and speed of response. Within the scope of the work studies were also made of matrices of other types in which layers of colored polymer were used as an absorption layer, as well as combined layers consisting of a metal film and a layer of colored polymer. Brief comments are made on these studies. 4 fig. 3 tab. 9 ref. Received by editors, 25 Oct 1971.

1/1

USSR

UDC 535.56:530.145

MUSTEL', YE.R., NIKANOROV, S.I., PARYGIN, V.N., FRIDMAN, G.KH.

"Spatial Electron Beam Light Modulator"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 6(12),1972,pp 11[illegible]-11[illegible]

Abstract: The technical and physical principles of operation of a spatial electron-beam light modulator with a cooled KDP crystal are described. The device contains a light source, a polarizer, an analyzer, a dividing prism-cube, a copper cold conductor, and a crystal with a silver-plated rear surface which serves as an electrode (signal plate). The crystal is cooled by liquid nitrogen to a temperature close to the point of phase transition ($T_p = -151^\circ$ C). A comparative analysis is made of possible regimes of information inscription. The possibility is shown of rejecting employment of a system of precise temperature stabilization in a regime of nonequilibrium inscription. The resolution and the image contrast produced by the modulator are studied, and methods of optimizing the device are shown. A number of possible applications of the device are described. 3 fig. 3 ref. Received, 10 May 1972.

1/1

USSR

UDC: 681.327.12

FRIDMAN, G. Kh., TSVETOV, Ye. R., KARAITOV, V. I., GALUSHCHENKO, V. V., LOS', V. F.

"An Optical-Electronic Device for Pattern Recognition"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 32, Nov 71, Author's Certificate No 318967, Division G, filed 13 Apr 70, published 28 Oct 71, p 151

Translation: This Author's Certificate introduces an optical-electronic device for pattern recognition which contains a coherent light source, collimator, transparency with recognition and reference patterns, Fourier transform lens, spatial light modulator, and photomultiplier, all located along an optical axis. The photomultiplier is connected to the signal input of a high-frequency filter. The device also contains an electronic oscilloscope. As a distinguishing feature of the patent, speed is increased and interference suppression is improved by using a synchropulse light pickup, a control voltage oscillator, and a series circuit comprised of a wide-band amplifier and a signal envelope detector. The spatial light modulator is made in the form of a photographic film carrying a hologram of a variable-period lattice wrapped around a transparent thin-walled cylinder rotated by an

1/2

USSR

FRIDMAN, G. Kh., et al., Soviet Patent No 318967

electric motor. The photomultiplier is fastened on a fixed base inside the rotating cylinder. In the base of the cylinder is an opening for the synchro-pulse light pickup, which is connected to the input of the control voltage oscillator and to one of the inputs of the oscilloscope. The output of the controlling voltage oscillator is connected to the controlling input of the high-frequency filter. The output of this filter is connected to the input of the wide-band amplifier, and the signal envelope detector output is connected to the other input of the oscilloscope.

USSR UDC 621.375.826:772.99

BAKHRAKH, L.D., MAKEYEV, V.A., FRIDMAN, G.KH.

"Preparation Of Holographic Matched Filters In Systems Using Ultrasonic Light Modulator"

V sb. Ispol'z. optich.kvant.generatorov v sovrem.tekhn. i med. Ch.2-3 (Use Of Lasers In Contemporary Technology And Medicine. Parts 2-3--Collection Of Works), Leningrad, 1971, pp 64-67 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A462)

Translation: Equipment is described which makes it possible to perform both preparation of matched filters and optical processing of signals (pattern identification). An ultrasonic coil is used as a light modulator, with six emitters immersed in distilled water. The emitters are excited from a standard signal generator at a frequency of 10 MHz. The converting lens of the reference channel has a focal length F = 150 mm, and an aperture D =20 mm. The converting lens of the signal channels have, respectively, F = 600 mm and D =70 mm. A LG-75 laser in a one-mode regime serves as the light source. It is possible

1/2

USSR

BAKHRAKH, L. D. et al, V sb. Ispol'z. optich.kvant.generatorov v sovrem.tekhn. i med. Ch.2-3, 1971, pp 64-67 (From RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A462)

to attain optimum electivity of the system by changing the frequency characteristic of the filter. The system has great sensitivity to transverse shifts and to a change of the signal parameters. In view of the fact that for preparation of the filter only one of the diffraction orders of the signal spectra is used, the size of the filter even with a longfocused optics (F = 600 mm) amounts to < 1 mm^2. This makes it possible to record a larger number of the filters on one area of the photorecording medium. The theoretical development and a scheme of the unit are given. 1 ill. 5 ref. L.K.

2/2

USSR UDC 681.327.12

FRIDMAN, G. KH., and TSVETOV, YE. R.

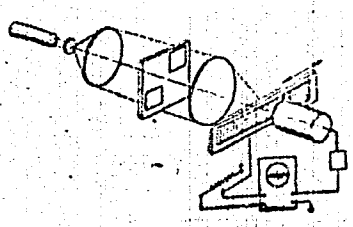
"A Pattern Recognition Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 12, 1970, Author's Certificate No 267212, filed 4 Nov 68, p 125

Abstract: This Author's Certificate introduces a pattern recognition device which contains a laser, an optical system, transparencies with the image to be studied and a master image, a lens which performs Fourier transformation, and a photoreceiver connected through a high-frequency filter to the vertical deflection input of an oscillograph. As a distinguishing feature of the patent, the dynamic range of output signals is extended, and the device is simplified by installing a spatial light modulator such as a movable transparent plate with variable line spacing in front of the photoreceiver in the focal plane of the lens and mechanically connecting this modulator to a potentiometric pickup which is connected to the horizontal deflection input of the oscillograph.
1/1

USSR

FRIDMAN, G. KH., et al., Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 12, 1970, Author's Certificate No 267212, filed 4 Nov 68, p 125



USSR

UDC 51

POLTEROVICH, V. M., FRIDMAN, G. YA.

"Model of Interaction in the Production and Consumption System"

V sb. Detsentralizovan. metody upr. (Decentralized Methods of Control--collection of works), Moscow,, 1972, pp 93-100 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V352)

No abstract

1/1

USSR UDC: 621.317.8

FRIDMAN, I. D.

"Monitoring the Resistance of Microwire Resistors During the Winding Process"

Elektron. tekhnika. Nauchno-tekhn. sb. Radiokomponenty (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 1, pp 106-112 (from RZh-Radiotekhnika. No 5, May 71, Abstract No 5V304)

Translation: The author presents a noncontact modification of the bridge method and a device based on this method for checking resistors during winding without damaging the insulation. A special tracking system which compensates for the voltage drop across the current-collecting electrode eliminates the effect of nonuniformity in insulation thickness and instability of the voltage and frequency of the supply oscillator on the results of measurements. Resumé.

1/1

USSR UDC: 621.315.3

FRIDMAN, I. D.

"Measurement of the Running Resistance of Microwire During Casting"

Elektron. tekhnika. Nauchno-tekhn. sb. Radiokomponenty (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 1, pp 119-127 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V420)

Translation: A device based on the ohmmeter method is proposed for measuring the running resistance of cast microwire during the casting process without damaging the insulation. The working current is stabilized by an automatic control system which eliminates the effect of nonuniformity in insulation thickness on the results of measurements. Resumé.

1/1

USSR

UDC 622.342:541.183.12

FRIDMAN, I. D., POCHKINA, L. YE., ZDOROVA, E. P., BEK, R. YU., MASLIY, A. I., PUNISHKO, O. A., POCHIVALOV, I. N., and STAFEYEVA, L. S.

"Ion-Exchange Technology in Gold Hydrometallurgy"

Moscow, Tsvetnyye Metally, No 3, Mar 70, pp 70-74

Abstract: Ion-exchange technology permits the use of filter-free systems, thus eliminating both costly equipment and cumbersome operations -- filtration of pulp and washing of precipitates as well as precipitation of Au from solutions. Sorption leaching, which is more complete in dissolving Au from ore and reduces the loss of dissolved gold in the dump pulp, offers much better conditions for higher Au extraction. In order to provide satisfactory results, the new technology requires the use of anionites, which are selective with respect to Au, and also have high kinetic, mechanical, and regeneration properties. The selectiveness of the AP-2 anionite, synthesized at the Kemerov Scientific-Research Institute for the Chemical Industry, was found to be 2--2.5 and its capacity -- 1.3--1.5 times that of similar anionites. The anionite was tested on a semi-industrial unit using a counter-current system. The high desorption capacity of the bifunctional AP-2 anionite with respect to metal impurities makes it possible to simplify the regeneration process and reduce the number of required elements. The process

1/2

USSR

FRIDMAN, I. D., et al, Tsvetnyye Metally, No 3, Mar 70, pp 70-74

includes the following phases: desorption of CN, Zn, and Ni with HNO_3 or H_2SO_4 solutions; desorption of Au, Ag, and Cu by chloride and sulfide solutions of thiourea during electroelution, and disorption of Fe by NH_4NO_3 alkaline solutions at 50--55°C. The high desorption capacity of the AP-2 anionite determines the relatively short duration of the regeneration process: desorption of CN, Zn, and Ni -- 5 hrs; desorption of Au, Ag, Cu during electroelution -- 3--5 hrs; desorption of Fe--5 hrs. The complete procedural flow chart is given in the original article.

2/2

1/2 CC9 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--ION EXCHANGE TECHNOLOGY IN THE HYDROMETALLURGY OF GOLD -U-

AUTHOR-(05)-FRIDMAN, I.D., POCHKINA, L.E., ZDOROVA, E.P., BEK, R.YU., HASLIY, A.I.
COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(3), 70-4

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HYDROMETALLURGY, GOLD, ION EXCHANGER, EXTRACTIVE METALLURGY/(U)APZ ANION EXCHANGER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1407 STEP NO--UR/0136/70/043/003/0070/0074

CIRC ACCESSION NO--AP0126945

UNCLASSIFIED

2/2 CC9 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0126945

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TECHNOL. SCHEMATIC DIAGRAM FOR THE FILTERLESS SORPTION PROCESS IN THE EXTN. OF AU FROM CYANOGEN PULPS BY USE OF ANION EXCHANGER AP 2 IS GIVEN. AP 2, BASED ON CHLORMETHYLATED COPOLYMER STYRENE DIVINYLBENZENE AND TERTIARY AMINE, WAS SYNTHESIZED UNDER LAB. CONDITIONS. THE INCREASE IN SELECTIVITY OF AP 2 FOR GOLD IS 2-2.5 TIMES AND ITS CAPACITY IS 1.3-1.5 TIMES THAT OF OTHER ANION EXCHANGERS UNDER ANALOGOUS CONDITIONS.

UNCLASSIFIED

USSR

UDC: 621.375.026(088.8)

FRIDMAN, I. S.

"A Transformerless Power Amplifier"

USSR Author's Certificate No 262186, filed 24 Jun 68, published 2 Jun 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D135 P)

Translation: The proposed device belongs to that class of transformerless power amplifiers which contain a device for stabilizing the working current based on transistors with complementary symmetry. As a distinguishing feature of the patent, nonlinear distortions are reduced and the input impedance is increased by connecting the emitters of the transistors in the input stage of the device for stabilizing the working point through resistors to the output of the final stage. E. L.

1/1

USSR

UDC 629.7.036.3:536.24

FRIDMAN, L. I.

"Thermal Fatigue and Adaptability of Aircraft Engine Parts"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1970, No. 45, pp 260-269 (from RZh-Aviatsionnyye i raketnyye dvigateli, No 4, Apr 72, Abstract No 4.34.52)

Translation: The article points out that cyclic nonuniform heating leads to breakdown from thermal fatigue or to a change in shape (warping). Conditions leading to these phenomena are discussed. Methods for making an approximate calculation of the adaptability of working blades and discs of turbines were constructed on the basis of the theorems of Melan and Koiter of adaptability theory. 7 ill., 11 ref. Resume.

1/1

USSR UDC 621.55

RUSHCHINSKIY, V. M., FRENKEL', A. Ya., and FRIDMAN, L. I., Central Scientific Research Institute of Large-Scale Automation

"A Method of Detecting Faulty Data Channels in a System for Monitoring a Technological Operation"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 21, Aug 71, Author's Certificate No 309362, Division G, filed 24 Feb 69, published 9 Jul 71, p 188

Translation: This Author's Certificate introduces: 1. A method of detecting faulty data channels in a system for monitoring a technological operation such as a boiler installation by measuring the output parameters of the operation, computing the values of the same parameters by means of a mathematical model of the process being monitored, and comparing the two. As a distinguishing feature of the patent, in order to improve the reliability of the monitoring system when the discrepancy between the measured and calculated values of several output parameters of the operation goes beyond the permissible value, the controlling and disturbing actions disconnected from the inputs of the model are sequentially compared with those calculated on the model, and the defect is determined in the measurement channel for the input quantity for